SOIL TEMPERATURE CHART

AN UNDER USED TURF MANAGEMENT TOOL

The use of soil temperature data is certainly useful for predicting the germination of annual weeds like *Poa annua* (21ºC), *Eleusine indica* (16-18ºC) and *Digitaria* sp. (12-15ºC). This will then help with correct timing of pre-emergent herbicide treatments. But soil temperature can also be a useful tool for predicting disease activity, turfgrass growth patterns and to a lesser extent insect activity.

The table shows critical soil temperature ranges which may be useful for turf managers. Most of this information is from the US and should be appropriately used and adapted for Australian conditions.

Soil temperature information data can be obtained from the Bureau of Meteorology website (www.bom.gov.au), but measurement of temperature on site will be most valuable as significant variation can occur even across small distances depending on soil type, turf cover, aspect, shade etc. It is important to note that turf cover will have an insulating effect on soil temperature and so on site results may vary from those measured by the Bureau.

Critical Soil Temperatures in Turfgrass Management (measured at 10cm depth)*
** information primarily sourced from North Carolina State University*

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TURFGRASS GROWTH AND DEVELOPMENT

Cool Season Grasses	
32ºC	Shoot growth ceases
25ºC	Root growth ceases
21ºC	Maximum temperature for root growth of any consequence
21ºC	Time to plant grasses in late summer
16-24ºC	Optimum temperature for shoot growth
10-18ºC	Optimum temperature for root growth
4ºC	Shoot growth ceases
1ºC	Root growth ceases
-7ºC	Low temperature kill possible if temperature subsequently drops rapidly below -7°C

Warm Season Grasses	
49°C	Shoot growth ceases
43°C	Root growth ceases
27-32°C	Optimum temperature for shoot growth
24-29°C	Optimum temperature for root growth
23°C	Optimum time to overseed with ryegrass in the autumn Time to plant warm season grasses in the spring
18°C	Expected spring root decline is triggered and roots turn brown and die within 1 or 2 days
10°C	Root growth begins to slow below this temperature
10°C	Chilling injury resulting in discoloration is possible
10°C	Start of dormancy resulting in discoloration
-4°C	Low temperature kill possible

Weed Control	
21°C	Commencement of *Poa annua* germination in autumn
16-18°C	Germination of *Eleusine indica* is expected in spring
12-15°C	Germination of *Digitaria* sp. is expected in spring

Insect Control	
13°C	Minimum temperature for scarab grub and mole cricket activity.

Disease Control	
13°C	Preventative fungicide applications should be made for fairy ring control
18°C	Summer Patch (*Magnaporthe poae*) - infects roots during spring and summer when soil temperatures are above 18°C
4-16°C	Take-all Patch (*Gauemannomyces graminis*) - infects roots during autumn and spring when soil temperatures are between 4°C and 16°C. Autumn fungicide applications most important for preventative control
16-27°C	Spring Dead Spot (*Ophiosphaerella korrae* and *O. narmari*) infects couchgrass roots in autumn in this temperature range. Preventative fungicide applications should be applied in this target zone
21°C	Large Patch (*Rhizoctonia solani*) - begins to infect in autumn when soil temperatures fall to this level Preventative fungicide applications should be targeted to this soil temperature

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